

**REMARKS/ARGUMENTS**

Claims 1-5, 7-13, 15-26 and 28 are pending in this application. By this Amendment, claims 1, 18, 21 and 22 are amended. Support for the claims can be found throughout the specification, including the original claims and the drawings. Withdrawal of the rejections in view of the above amendments and the following remarks is respectfully requested.

**I. Informalities**

The Office Action objects to the specification and claims 18 and 22 due to informalities. It is respectfully submitted that the amendments to the specification and claims 18 and 22 are responsive to the Examiner's comments, and thus these objections should be withdrawn.

**II. Rejection Under 35 U.S.C. §112, Second Paragraph**

The Office Action rejects claims 1, 18, 21 and 22 under 35 U.S.C. §112, second paragraph, as allegedly indefinite. It is respectfully submitted that the amendments to claims 1, 18, 21 and 22 are responsive to the Examiner's comments, and that claims 1, 18, 21 and 22 meet the requirements of 35 U.S.C. §112, second paragraph. Accordingly, the rejection should be withdrawn.

**III. Rejection Under 35 U.S.C. §102(b)**

The Office Action rejects claims 1-5, 7-10, 15, 17-24 and 28 under 35 U.S.C. §102(b) over U.S. Patent No. 2,494,243 to L.D. Houlis (hereinafter "Houlis"). The rejection is respectfully traversed.

Independent claim 1 is directed to a device that supplies mixed gas to radiant heating type gas burners having a housing, a plurality of burner assemblies in the housing for combustion of the mixed gas therein, each of the plurality of burner assemblies having a burner chamber that receives a mixture of fuel gas and air therein, and a glass plate placed on top of the housing. The device includes a plurality of mixing tubes respectively in communication with the plurality of burner chambers for supplying the fuel gas and air thereto, a plurality of gas nozzles for respectively spraying the fuel gas into the plurality of mixing tubes, a plurality of air supply tubes for respectively directing air toward the plurality of mixing tubes, wherein a first end of each of the plurality of mixing tubes is coupled to a corresponding burner chamber and a first end of each of the plurality of air supply tubes is coaxially aligned with a second end of a corresponding mixing tube, with a predetermined gap formed therebetween, wherein a cross sectional area enclosed by an inner diameter of the first end of each air supply tube, facing the second end of the respective mixing tube, is greater than a cross sectional area enclosed by an inner diameter of the second end of the respective mixing tube, a plurality of air passages defined by the predetermined gaps formed between the air supply tubes and the mixing tubes, wherein air outside of the plurality of mixing tubes and within the housing is drawn through the plurality of air passages and into the plurality of mixing tubes by a pressure difference between the outside and inside of the plurality of mixing tubes, and at least one fan in communication with a second end of at least one of the plurality of air supply tubes for supplying air thereto.

Independent claims 18, 21 and 22 recite similar features in varying scope.

Houlis neither discloses nor suggests all of the features recited in independent claims 1, 18, 21 and 22, or the respective claimed combinations of features.

Houlis discloses a dial burner installation including a pipe 4 having a first end fitted to a burner tube 1 and a second end fitted in a T-fitting 7. The T-fitting 7 forms a junction between a gas source supply pipe 60 that supplies gas to the pipe 4 and a tubular discharge outlet 54 of a fan chamber 52 that supplies air to the pipe 4. A cap 10 is positioned on the end of the T-fitting 7 opposite the pipe 4, and an end of the discharge outlet 54 is fitted in an opening 13 in the cap 10. A housing 16 is fitted in the top end of the T-fitting 7, with a supply pipe 15 that receives gas from the supply pipe 60 fitted in the housing 18. Gas is directed from the supply pipe 15, through a chamber 18 in the housing 16 and a conical jet opening 21/22, where it changes direction and is forced into a venture sleeve 5/passage 6 in the pipe 4. Air is forced through the outlet 54, past the bottom end of the housing 16 within the T-fitting 7, and into the passage 6, where it mixes with the gas. The gas/air mixture mixed in the pipe 4 flows into the burner tube 1 for burning. The neck 54 of the discharge outlet 53 is inserted in the opening 13 in the cap 10 installed on a first end of the T-fitting 7. A second end of the T-fitting 7 is fitted to the end of the pipe 4.

The Office Action collectively compares the discharge outlet 53/neck 54/cap 10 to the claimed air supply tubes, compares the pipe 4 to the claimed mixing tube, and compares the gap shown between Houlis' cap 10 and the corresponding end of the T-fitting 7 to the claimed air passage.

In such an assembly and comparison of components, the end of the assembled discharge outlet 53/neck 54/cap 10, and in particular, a cross sectional area enclosed by an inner diameter of such an assembly, is defined by the central opening 13 in the cap 10. That is, in this assembly of components, the diameter of the cap 10 would define the outer diameter, while the diameter of the central opening 13/diameter of the neck 54 inserted therein would define the inner diameter. Thus, Houlis neither discloses nor suggests that a cross sectional area enclosed by an inner diameter of the first end of each air supply tube, facing the second end of the respective mixing tube, is greater than a cross sectional area enclosed by an inner diameter of the second end of the respective mixing tube, as recited in independent claim 1.

Similarly, Houlis neither discloses nor suggests that a cross sectional area enclosed by an inner diameter of the first end of each air supply tube, facing the corresponding end of the respective mixing tube, is greater than a cross sectional area enclosed by an inner diameter of the corresponding end of the respective mixing tube, as recited in independent claim 18; nor that a cross sectional area enclosed by an inner diameter of the first end of each air supply tube, facing the corresponding end of the respective mixing tube, is greater than a cross sectional area enclosed by an inner diameter of the corresponding end of the respective mixing tube, as recited in independent claim 21; nor that a cross sectional area enclosed by an inner diameter of the first end of the air supply tube is greater than or equal to a cross sectional area enclosed by an inner diameter of the second end of the mixing tube, as recited in independent claim 22.

Accordingly, it is respectfully submitted that independent claims 1, 18, 21 and 22 are

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allowable over Houlis, and thus the rejection of independent claims 1, 18, 21 and 22 under 35 U.S.C. §102(b) over Houlis should be withdrawn. Dependent claims 2-5, 7-10, 15, 17, 19, 20, 23, 24 and 28 are allowable over Houlis at least for the reasons set forth above with respect to independent claims 1, 18 and 22, from which they respectively depend, as well as for their added features.

#### **IV. Rejections Under 35 U.S.C. §103(a)**

The Office Action rejects claims 11, 12 and 25 under 35 U.S.C. §103(a) over Houlis in view of U.S. Patent No. 5,193,273 to Riehl (hereinafter "Riehl"); rejects claims 13 and 26 under 35 U.S.C. §103(a) over Houlis; and rejects claim 16 under 35 U.S.C. §103(a) over Houlis in view of U.S. Patent No. 5,425,353 to Herbert (hereinafter "Herbert"). These rejections are respectfully traversed.

Dependent claims 11-13, 16, 25 and 26 are allowable over Houlis at least for the reasons set forth above with respect to independent claims 1 and 22, from which they respectively depend, as well as for their added features. Further, Riehl is merely cited as allegedly teaching the use of two symmetric members bonded together, and Herbert is merely cited as allegedly teaching use of a variable speed motor. Thus, Riehl and Herbert, either alone or in combination, fail to overcome the deficiencies of Houlis. Accordingly, it is respectfully submitted that claims 11-13, 16, 25 and 26 are allowable over the respective applied combinations, and thus these rejections should be withdrawn.

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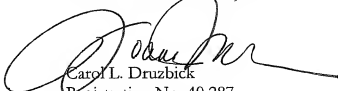
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**V. Conclusion**

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned, Joanna K. Mason, at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. §1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,  
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